

## Claims

- [c1] 1. A data processing system-implemented method of searching for a plurality of information objects comprising:
- receiving a first signal that includes or is used to form a first query, wherein the first query includes a first keyword within a hierarchy;
- expanding the first query to a second query, wherein the second query includes the first keyword and a second keyword within the hierarchy;
- searching the database using the second query; and
- finding a first identifier for a first information object that corresponds to the second query, wherein the first information object is part of the plurality of information objects.
- [c2] 2. The method of claim 1, wherein:
- the database comprises a plurality of information objects including the first information object and a plurality of keywords including the first keyword and the second keyword;
- each information object within the plurality of information objects has at least one related keyword from the plurality of keywords; and
- the hierarchy defines a relationship among the keywords within the plurality of keywords.
- [c3] 3. The method of claim 2, further comprising automatically determining a first association score between the first keyword and the second keyword based at least in part upon their positions within the hierarchy.
- [c4] 4. The method of claim 3, further comprising automatically determining a second association score between the first keyword and the third keyword based upon their positions within the hierarchy, wherein expanding the first query is performed such that the second query does not include the third keyword.
- [c5] 5. The method of claim 1, further comprising filtering at least some of the information objects within the plurality of information objects to meet a defined criterion.
- [c6] 6. The method of claim 1, further comprising:
- determining an association score between each keyword within the first query and each keyword within the second query based at least in part upon their positions within the hierarchy; and
- calculating a first relevance score for the first information object, wherein:

at least one first relevancy rating is obtained for the first information object;  
the first relevance score includes a first sum divided by a number of keywords within the second query;  
the first sum includes a first summation of first products; and  
for each keyword within the second query, its first product includes a corresponding first association score and a corresponding first relevance rating.

- [c7] 7. A data processing system-implemented method of formulating a query comprising:  
receiving a first signal that includes or is used to form a first query having a first keyword; and  
automatically expanding the first query to a second query, wherein the second query includes the first keyword and a second keyword that is not present within the first query.
- [c8] 8. The method of claim 7, further comprising:  
searching a database using the second query, wherein an information object is associated with the second keyword but is not associated with the first keyword; and  
sending a second signal that includes an object identifier for the information object.
- [c9] 9. The method of claim 7, wherein:  
the first keyword, the second keyword, and a third keyword are represented by a first node, a second node, and a third node, respectively, within a keyword hierarchy;  
the method further comprises determining a first association score between the first node and the second node and a second association score between the first node and the third node, wherein the first and second association scores indicate that the first node is more closely associated with the second node than the third node; and  
expanding is performed such that the second query does not include the third keyword.
- [c10] 10. The method of claim 7, automatically determining an association score between the first keyword and the second keyword based at least in part upon their positions within the hierarchy.
- [c11] 11. The method of claim 7, wherein the association score is a function of a distance between connected nodes within the hierarchy.
- [c12] 12. The method of claim 7, wherein automatically determining the association score includes determining a first common ancestor.

0968407-0738664  
T09970740738664

[c13] 13. A data processing system readable medium having code embodied therein, the code including instructions executable by a data processing system, wherein the instructions are configured to cause the data processing system to perform a method of searching for a plurality of information objects, wherein the method comprises:  
receiving a first signal that includes or is used to form a first query, wherein the first query includes a first keyword within a hierarchy;  
expanding the first query to a second query, wherein the second query includes the first keyword and a second keyword within the hierarchy;  
searching the database using the second query; and  
finding a first identifier for a first information object that corresponds to the second query, wherein the first information object is part of the plurality of information objects.

[c14] 14. The data processing system readable medium of claim 13, wherein:  
the database comprises a plurality of information objects including the first information object and a plurality of keywords including the first keyword and the second keyword;  
each information object within the plurality of information objects has at least one related keyword from the plurality of keywords; and  
the hierarchy defines a relationship among the keywords within the plurality of keywords.

[c15] 15. The data processing system readable medium of claim 14, wherein the method further comprises automatically determining a first association score between the first keyword and the second keyword based at least in part upon their positions within the hierarchy.

[c16] 16. The data processing system readable medium of claim 15, wherein the method further comprises automatically determining a second association score between the first keyword and the third keyword based upon their positions within the hierarchy, wherein expanding the first query is performed such that the second query does not include the third keyword.

[c17] 17. The data processing system readable medium of claim 13, wherein the method further comprises filtering at least some of the information objects within the plurality of information objects to meet a defined criterion.

[c18] 18. The data processing system readable medium of claim 13, wherein the method

further comprises:

determining an association score between each keyword within the first query and each keyword within the second query based at least in part upon their positions within the hierarchy; and

calculating a first relevance score for the first information object, wherein:

at least one first relevancy rating is obtained for the first information object;

the first relevance score includes a first sum divided by a number of keywords within the second query;

the first sum includes a first summation of first products; and

for each keyword within the second query, its first product includes a corresponding first association score and a corresponding first relevance rating.

[c19]

19. A data processing system readable medium having code embodied therein, the code including instructions executable by a data processing system, wherein the instructions are configured to cause the data processing system to perform a method of formulating a query, wherein the method comprises:

receiving a first signal that includes or is used to form a first query having a first keyword; and

automatically expanding the first query to a second query, wherein the second query includes the first keyword and a second keyword that is not present within the first query.

[c20]

20. The data processing system readable medium of claim 19, the method further comprises:

searching a database using the second query, wherein an information object is associated with the second keyword but is not associated with the first keyword; and

sending a second signal that includes an object identifier for the information object.

[c21]

21. The data processing system readable medium of claim 19, wherein:

the first keyword, the second keyword, and a third keyword are represented by a first node, a second node, and a third node, respectively, within a keyword hierarchy;

the method further comprises determining a first association score between the first node and the second node and a second association score between the first node and the third node, wherein the first and second association scores indicate that the first node is more closely associated with the second node than the third node; and

expanding is performed such that the second query does not include the third keyword.

[c22] 22. The data processing system readable medium of claim 19, the method further comprises automatically determining an association score between the first keyword and the second keyword based at least in part upon their positions within the hierarchy.

[c23] 23. The data processing system readable medium of claim 19, wherein the association score is a function of a distances between connected nodes within the hierarchy.

[c24] 24. The data processing system readable medium of claim 19, wherein automatically determining the association score includes determining a first common ancestor.

2025/07/01 10:00:00